

The role of spatial proximity in daily mobility production: A case study in the North of Belgium

Abstract

Based on a set of spatial proximity characteristics this paper develops a model that estimates for every neighborhood in Flanders (Belgium) the amount of traffic that would be generated by an additional residential unit when socioeconomic variables are held constant. The results show that residential density, land use diversity and proximity of facilities influence daily travelled distances when these variables are measured in the immediate vicinity of the residential location of the respondent (within a radius of 1 km). When aggregating these variables at a larger geographical scale, in most cases the impact proves no longer significant. Variables based on the spatial distribution of jobs, or on the global accessibility of the entire population in the study area, do not show significant effects on the travel distance.

Despite the statistical significance only a fraction of the observed variance in reported distances is explained by characteristics of spatial proximity. However, we can assume that the importance of spatial structure in the genesis of mobility patterns will increase in case the cost of transport would rise (cf. peak oil). For this reason, the application of the mapped results of the proposed model could contribute to the practice of sustainable spatial planning.

Not unexpectedly, the most urbanized areas turn out to be the most resilient and sustainable locations. This means that a further increase of residential density and land use mix in urban areas is the best guarantee for curbing excessive mobility and preparing for the end of cheap oil.

Keywords

spatial proximity measures, travel behavior, sustainable spatial development, Flanders